AT06250R

60V N-Channel MOSFET

Features

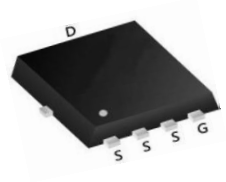
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

Product Summary

V_{DS}	60	V
I_D	25	A
$R_{DS(ON)}$ (at V_{GS}=10V)	20	mΩ
$R_{DS(ON)}$ (at V_{GS}=4.5V)	25	mΩ

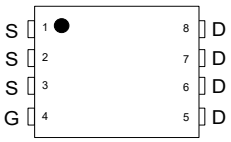
Applications

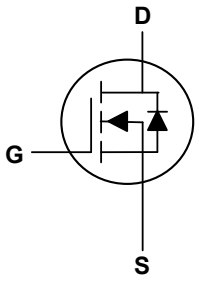
- High Frequency Point-of-Load,Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



DFN3X3-8L Top View

Top View





Absolute Maximum Ratings(T_C=25℃, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1]	I_D@T_C=25℃	25	A
Continuous Drain Current[1]	I_D@T_C=100℃	17.7	A
Pulsed Drain Current[2]	I_{DM}	80	A
Single Pulse Avalanche Energy[3]	EAS	150	mJ
Total Power Dissipation[4]	P_D@T_C=25℃	35	W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	---	3.6	℃/W

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=250uA	60	---	---	V
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	V_{GS}=10V , I_D=20A	---	15	20	mΩ
		V_{GS}=4.5V , I_D=20A	---	20	25	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	1	---	2.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V, T_J=25℃	---	---	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
Forward Transconductance	gfs	V_{DS}=5V , I_D=20A	---	15	---	S
Total Gate Charge	Q_g	V_{DS}=30V , V_{GS}=10V , I_D=20A	---	50	---	nC
Gate-Source Charge	Q_{gs}		---	6	---	
Gate-Drain Charge	Q_{gd}		---	15	---	
Turn-On Delay Time	$T_{d(on)}$	V_{DS}=30V , V_{GS}=10V , R_G=3Ω, R_L=6.7Ω	---	7.4	---	ns
Rise Time	T_r		---	5.8	---	
Turn-Off Delay Time	$T_{d(off)}$		---	28.2	---	
Fall Time	T_f		---	5.5	---	
Input Capacitance	C_{iss}	V_{DS}=30V , V_{GS}=0V , f=1MHz	---	2050	---	pF
Output Capacitance	C_{oss}		---	158	---	
Reverse Transfer Capacitance	C_{rss}		---	120	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current[1,5]	I_S		---	---	25	A
Diode Forward Voltage[2]	V_{SD}	V_{GS}=0V , I_S=20A , T_J=25℃	---	---	1.2	V
Reverse Recovery Time	t_{rr}	I_F=20A ,di/dt=100A/μs, T_J=25℃	---	28	---	nS
Reverse Recovery Charge	Q_{rr}		---	40	---	nC

Note:

1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The EAS data shows Max. rating . The test condition is V_{DD}=30V,V_{GS}=10V,L=0.5mH

4.The power dissipation is limited by 150℃ junction temperature

5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

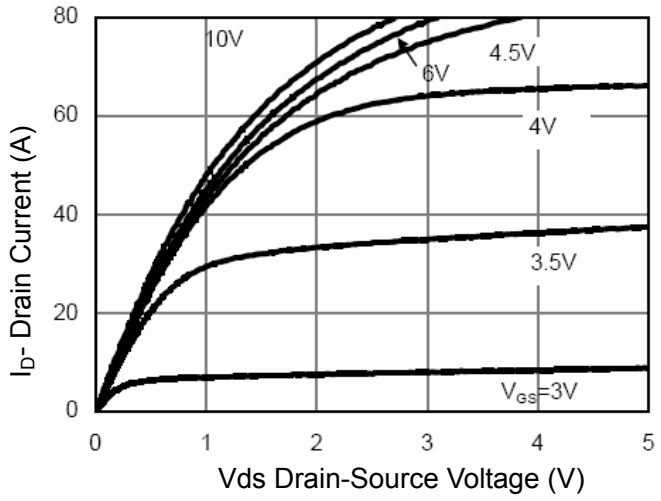


Figure 1 Output Characteristics

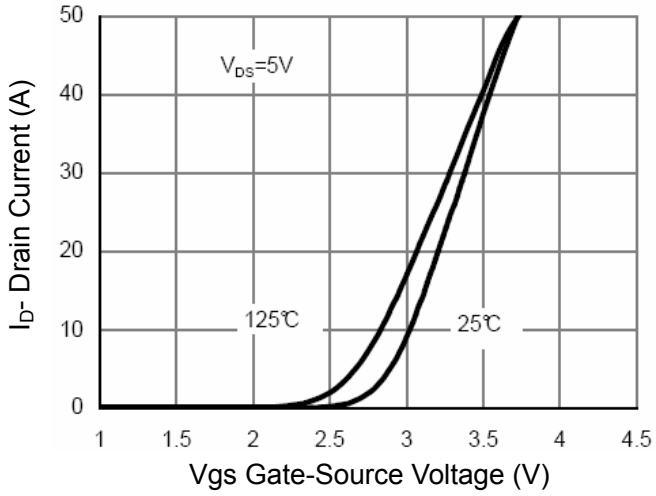


Figure 2 Transfer Characteristics

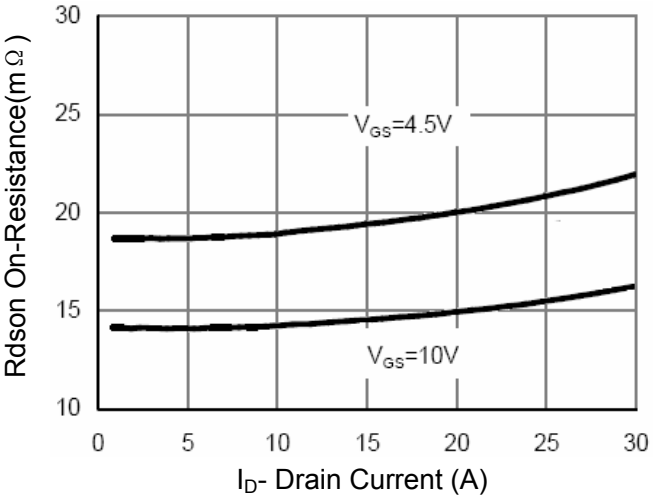


Figure 3 Rdson- Drain Current

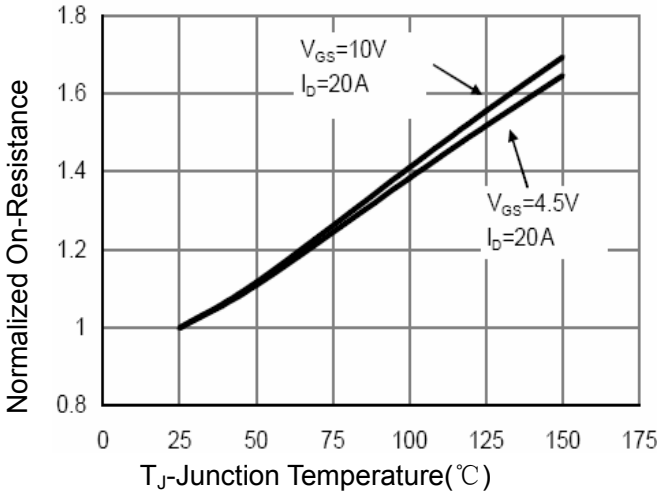


Figure 4 Rdson-Junction Temperature

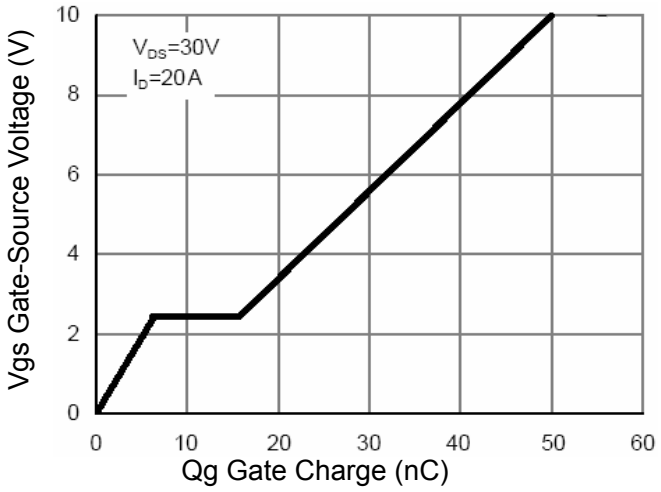


Figure 5 Gate Charge

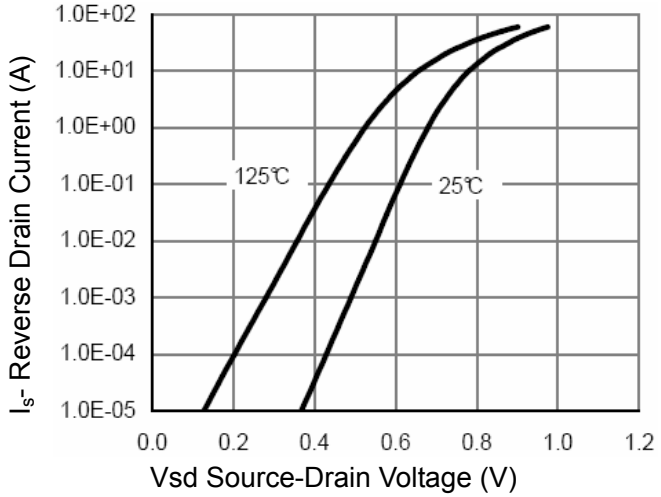


Figure 6 Source- Drain Diode Forward

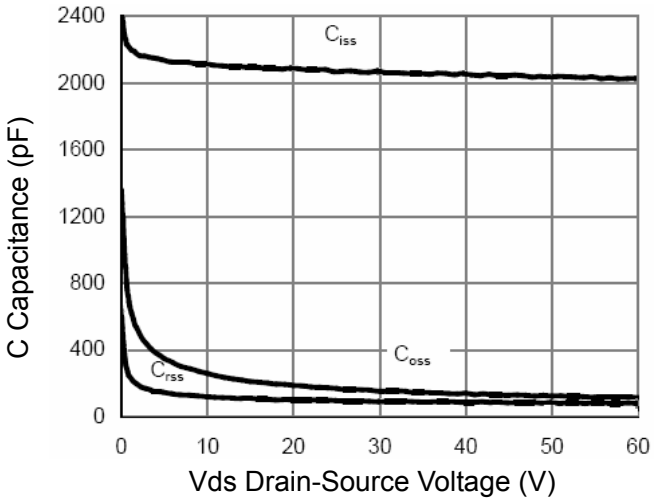


Figure 7 Capacitance vs Vds

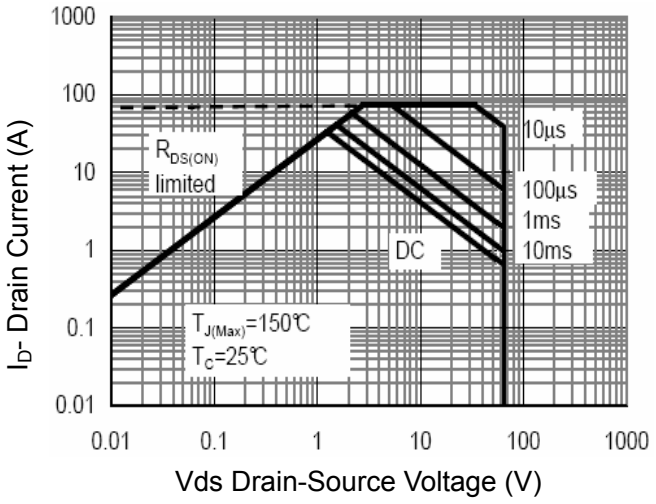


Figure 8 Safe Operation Area

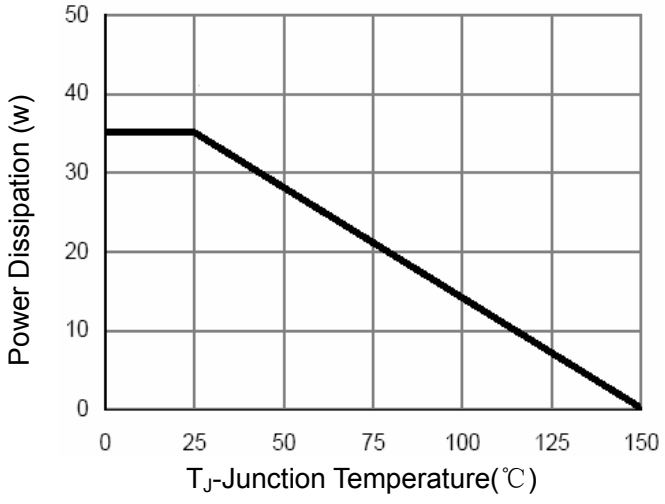


Figure 9 Power De-rating

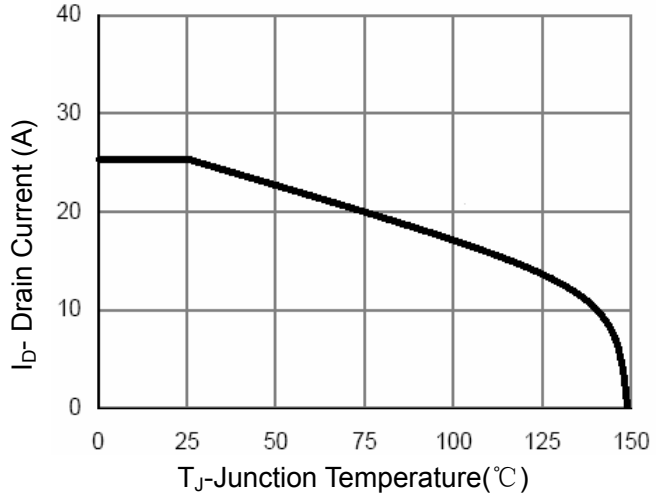


Figure 10 Current De-rating

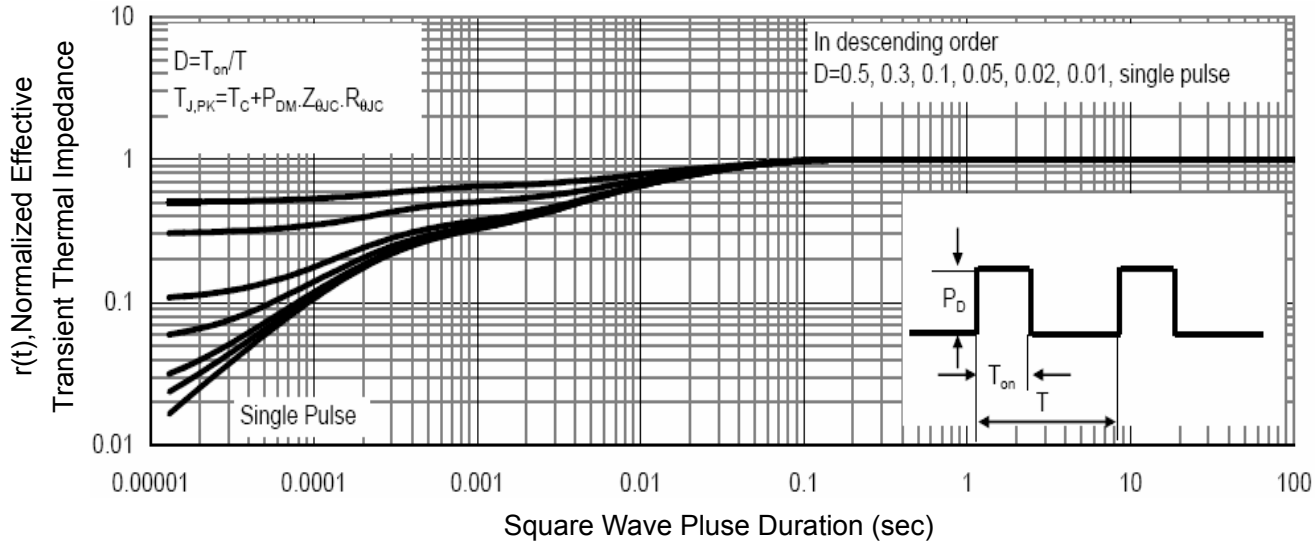
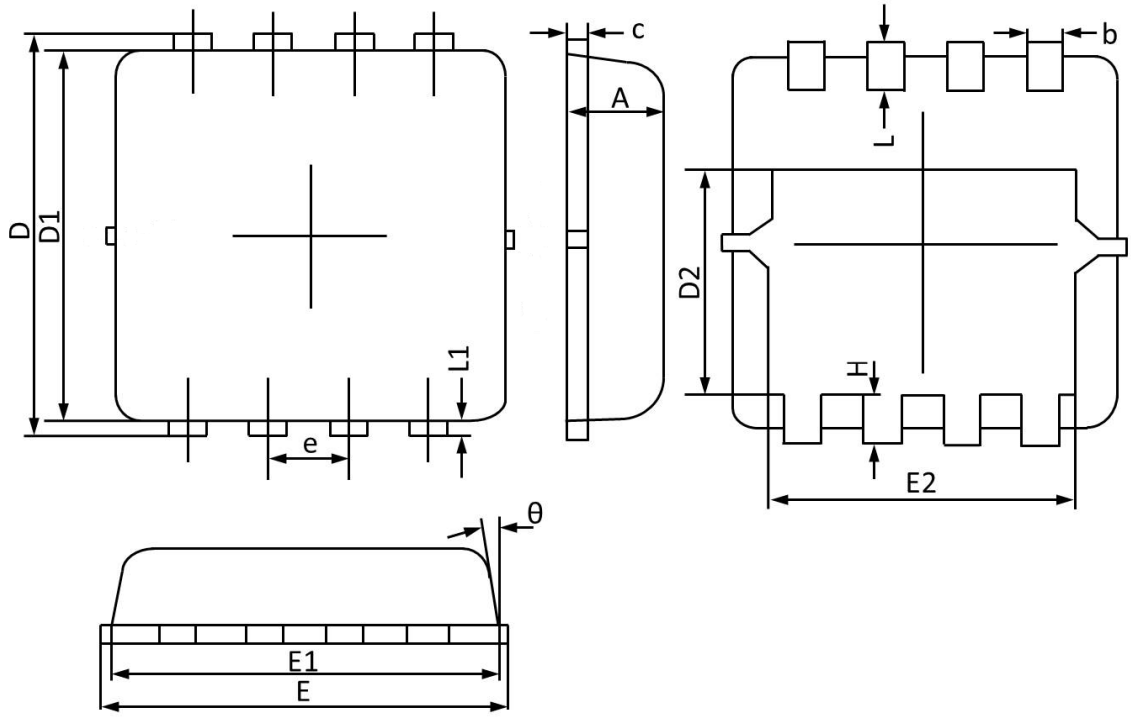


Figure 11 Normalized Maximum Transient Thermal Impedance

DFN3X3-8L Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.70	0.75	0.85	**E1**	2.90	3.10	3.25
b	0.24	0.30	0.35	**E2**	2.35	2.50	2.60
c	0.10	0.17	0.25	**e**	0.65 BSC		
D	3.10	3.30	3.45	**H**	0.30	0.40	0.50
D1	2.90	3.05	3.20	**L**	0.30	0.40	0.50
D2	1.45	1.70	1.95	**L1**	--	0.13	--
E	3.05	3.25	3.40	**θ**	0°		14°